

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 18-36 are presently pending in this case. Claims 18 and 34 are amended and Claims 35 and 36 are added by the present amendment. As amended Claims 18 and 34 and Claims 35 and 36 are supported by the original disclosure,¹ no new matter is added.

In the outstanding Official Action, Claims 18-33 are objected to; Claims 18, 19, 23, 24, 26, 27, and 31 were rejected under 35 U.S.C. §102(b) as anticipated by Dilger et al. (U.S. Patent No. 5,670,876, hereinafter “Dilger”); Claims 18, 20, 23-25, 31, and 32 were rejected under 35 U.S.C. §102(b) as anticipated by Hattori et al. (U.S. Patent No. 4,424,705, hereinafter “Hattori”); Claims 18, 21, and 33 were rejected under 35 U.S.C. §102(b) as anticipated by Carr et al. (U.S. Patent No. 4,745,363, hereinafter “Carr”); Claims 18, 21, and 28-30 were rejected under 35 U.S.C. §103(a) as patentable over Woyton (U.S. Patent No. 3,916,326) in view of Jansseune (U.S. Patent No. 6,043,646); and Claim 18, 21, and 22 were rejected under 35 U.S.C. §103(a) as patentable over McDearmon et al. (U.S. Patent Application Publication No. 20040017190, hereinafter “McDearmon”) in view of Jansseune. However, Claim 34 was allowed.

Applicants gratefully acknowledge the allowance of Claim 34.

With regard to the objection to Claims 18-33, Claim 18 is amended to be in independent form. Accordingly, the objection to Claims 18-33 is believed to be overcome.

With regard to the rejection of Claim 18 as anticipated by Dilger, that rejection is respectfully traversed.

Amended Claim 18 recites in part:

a target made of a ferromagnetic material;

¹See, e.g., the original claims and paragraphs 49, 59, and 72 of the publication of the application.

at least one magnet, the target and the magnet defining between one another an air gap; and
a magnetosensitive element detecting a magnetic induction caused by a presence of the target and related to the air gap between the target and the magnet, *wherein the at least one magnet has a unidirectional magnetization along a direction substantially perpendicular to a front surface of the magnet bounding one edge of the air gap*, the magnet having a cavity opening on the front surface of the magnet, the magnetosensitive element being seated in the cavity, the target having a geometric configuration such that the induction as a function of the position of the target corresponds to a predefined function.

Dilger describes a magnetic displacement sensor including two magnets 32 and 34 and a sensor 36.² The outstanding Office Action cited magnets 32 and 34 of Dilger as “at least one magnet” and sensor 36 of Dilger as “a magnetosensitive element.”³ However, it is respectfully submitted that column 4, lines 48-52 of Dilger describe that the two opposed magnets 32 and 34 have a magnetization of NS - SN, and thus magnets 32 and 34 cannot be considered at least one magnet having a *unidirectional magnetization*. If only a single magnet 32 or 34 is asserted as “at least one magnet,” it is respectfully noted that neither of magnet 32 and 34 include a cavity. Therefore, Dilger cannot teach or suggest “at least one magnet” as defined in amended Claim 18. Consequently, Claim 18 (and Claims 19-33, 35, and 36 dependent therefrom) is not anticipated by Dilger and is patentable thereover.

With regard to the rejection of Claim 18 as anticipated by Hattori, that rejection is respectfully traversed.

Amended Claim 18 recites in part “a magnetosensitive element detecting a magnetic induction *caused by a presence of the target and related to the air gap between the target and the magnet.*” In contrast, Hattori describes an inductive sensor that uses coil 17 to detect the movement (and *not* the presence) of diaphragm 12 by detecting a change in magnetic

²See Dilger, Figure 5.

³See the outstanding Office Action at page 3, lines 14-18.

flux.⁴ Thus, Hattori cannot detect diaphragm 12 if diaphragm 12 does not move, as the magnetic flux will not change if diaphragm 12 does not move. Therefore, the device of Hattori cannot determine the *presence* of diaphragm 12, the device can only determine if diaphragm 12 is *moving*. As Hattori does not describe any device that detects a magnetic induction caused by a *presence* of the target and related to the air gap between the target and the magnet, it is respectfully submitted that Hattori does not teach “a magnetosensitive element” as defined in amended Claim 18. Consequently, Claim 18 (and Claims 19-33, 35, and 36 dependent therefrom) is not anticipated by Hattori and is patentable thereover.

With regard to the rejection of Claim 18 as anticipated by Carr, that rejection is respectfully traversed.

Carr describes a magnetic displacement sensor including magnet 10, a Hall integrated circuit 14, and a wheel with teeth 16, 18, and 20.⁵ The outstanding Office Action cited magnet 10 of Carr as “at least one magnet,” Hall integrated circuit 14 of Carr as “a magnetosensitive element,” and wheel with teeth 16, 18, and 20 as “a target.”⁶ However, it is respectfully submitted that Hall integrated circuit 14 only detects a variation of magnetic flux in order to increment a counter so that the position of the target can be deduced from the counter. Therefore, Carr only describes how to detect the presence or absence of gear teeth 16, 18, and 20 *as they rotate* past the Hall integrated circuit 14. Carr does not describe a target presenting a specific geometry that allows determining the *presence* of the target from the induction value *if the teeth are not moving*. According to Carr, only the use of a counter may allow deduction of the position of a moving target. Further, it is respectfully submitted that Carr does not teach or suggest that “the target having a geometric configuration such that the induction as a function of the position of the target corresponds to a predefined function.”

⁴See Hattori, column 4, lines 20-22.

⁵See Carr, Figure 1 and column 3, lines 31-39.

⁶See the outstanding Office Action at page 7, lines 3-9.

Thus, it is respectfully submitted that Carr does not teach “a target,” “at least one magnet,” and “a magnetosensitive element” as defined in amended Claim 18. Consequently, Claim 18 (and Claims 19-33, 35, and 36 dependent therefrom) is not anticipated by Carr and is patentable thereover.

With regard to the rejection of Claim 18 as unpatentable over Woyton in view of Jansseune, that rejection is respectfully traversed.

Woyton describes a sensing circuit including coil 16.⁷ Jansseune describes a proximity switch including magnet 10 and sensor 12.⁸ The outstanding Office Action apparently cited magnet 10 of Jansseune as “at least one magnet” and sensor 12 of Jansseune as “a magnetosensitive element.”⁹ However, it is respectfully submitted that Woyton only describes the use of a coil 16 to detect a variation of *movement* of wheel 14 based on a change in magnetic flux in the coil 16. The transducer object in Woyton uses a voltage indicator to determine speed and direction, but *not* the *presence* of an unmoving wheel 14.¹⁰ Thus, Woyton does not describe any device that detects a magnetic induction caused by a *presence* of the target and related to the air gap between the target and the magnet.

Jansseune only describes that sensor 12 senses a change in magnetic flux through the sensor due to movement of part 14.¹¹ Jansseune does not describe that sensor 12 can determine the air gap between part 14 and magnet 10, or the *presence* of an unmoving part 14. Therefore, it is respectfully submitted that Jansseune also does not teach or suggest “a magnetosensitive element detecting a magnetic induction caused by a *presence* of the target and related to the air gap between the target and the magnet.” Thus, it is respectfully submitted that proposed combination does not teach or suggest “a target,” “at least one magnet,” and “a magnetosensitive element” as defined in amended Claim 18. Consequently,

⁷See Woyton, Figure 2 and column 3, lines 31-49.

⁸See Jansseune, Figure 1 and column 2, lines 2-10.

⁹See the outstanding Office Action at pages 8 and 9.

¹⁰See Woyton, column 4, lines 8 and 9.

¹¹See Jansseune, column 2, lines 2-10.

Claim 18 (and Claims 19-33, 35, and 36 dependent therefrom) is patentable over Woyton and Jansseune.

With regard to the rejection of Claim 18 as unpatentable over McDearmon in view of Jansseune, that rejection is respectfully traversed.

The outstanding Office Action apparently cited sensor 5 of McDearmon as “at least one magnet” and sensor 5 of McDearmon as “a magnetosensitive element.”¹² McDearmon describes that sensor 5 senses a *change* in an air gap between the sensor 5 and plate 1, but cannot distinguish a “step” in the plate 1.¹³ Accordingly, it is respectfully submitted that McDearmon only describes that sensor 5 can determine the angular position of plate 1 based on changes in the air gap,¹⁴ and thus cannot determine the position of plate 1 unless the plate 1 is moving. Therefore, it is respectfully submitted that McDearmon also does not teach or suggest “a magnetosensitive element detecting a magnetic induction caused by a *presence* of the target and related to the air gap between the target and the magnet.”

Further, as noted above, Jansseune also does not teach or suggest “a magnetosensitive element detecting a magnetic induction caused by a *presence* of the target and related to the air gap between the target and the magnet.” Thus, it is respectfully submitted that the proposed combination does not teach or suggest “a target,” “at least one magnet,” and “a magnetosensitive element” as defined in amended Claim 18. Consequently, Claim 18 (and Claims 19-33, 35, and 36 dependent therefrom) is patentable over McDearmon and Jansseune.

New Claims 35 and 36 are supported at least by paragraphs 49 and 72 of the publication of the application. New Claims 35 and 36 are dependent on Claim 18, and thus are believed to be patentable for at least the reasons described above with respect to Claim

¹²See the outstanding Office Action at pages 8 and 9.

¹³See McDearmon, paragraph 28.

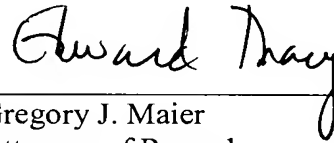
¹⁴See McDearmon, paragraph 26.

18. In addition, Claims 35 and 36 recite subject matter that further patentably defines over the cited references. In particular, new Claims 35 and 36 recite that the induction as a function of the position of the target is a linear function across the entire maximum measurable angular or linear travel, and Claim 36 recites that the entire maximum measurable angle travel is 360°. It is respectfully submitted that none of the cited references describe these features. Consequently, new Claims 35 and 36 are also allowable.

Accordingly, the pending claims are believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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